Friday, Oct 17, 2008

Posted on Sun, Sep. 21, 2008

Americans need a better way to assess the risk of hurricanesSaffir-Simpson categories contribute to casualties

The Saffir-Simpson Hurricane Scale is lulling coastal residents into a fatally false sense of security. That's because the scale's five single-digit categories distort the danger of an approaching tropical weather system.

It happened during Hurricane Katrina, when some South Mississippians made the mistake of underestimating the hurricane's threat by comparing it to Hurricane Camille. Because Camille was a 5 on the Saffir-Simpson scale and Katrina was weakening into a 3, some people assumed Katrina was less of a threat to their lives and property.

That assumption cost some people their lives.

Biloxi Mayor A.J. Holloway said the day after Katrina: "It looks like Hurricane Camille killed more people yesterday than it did in 1969."

While Katrina's winds were slower than Camille's, its unprecedented storm surge was far deeper and deadlier.

The same thing just took place in Texas, where coastal residents understandably but regrettably compared Hurricane Ike, a deceptively low-level Category 2, to previous higher-level storms and decided not to evacuate.

We appreciate that perfection is not possible.

As Max Mayfield, the former National Hurricane Center director, says, "To get a perfect storm surge forecast, you have to have a perfect forecast for the track, a perfect forecast for its intensity and a perfect forecast of its structure, and we don't know how to do any of those perfectly."

But we could certainly be doing all of those better.

Benton McGee, supervisory hydrologist at the U.S. Geological Survey's storm surge center in Ruston, La., said of the computer models that produce storm surge estimates: "Models are based on data, so if you don't have a lot of data, then the model is limited in what it can do. We're really just now putting out enough (surge) sensors and enough instruments in the field to really record exactly what's happening."

"Just now" is obviously not soon enough to save lives that have already been lost.

Water is more deadly than wind

Perhaps no single-digit system of classification can summarize both the wind and water threat of a tropical weather system. A hurricane is, after all, the most complex weather phenomenon on the planet.

Yet we must have a hurricane classification system that can be readily understood by those in harm's way. And it must do a better job of what the Saffir-Simpson scale set out to accomplish.

In the early '70s, civil engineer Herbert Saffir devised a 1-5 scale based on wind speed that indicated how much damage would be done to structures. He gave the scale to the National Hurricane Center, where its director, Bob Simpson, added the effects of storm surge and flooding.

But as advances in science and technology have enabled us to better predict the course and appraise the impact of tropical weather systems, the Saffir-Simpson scale is no longer an adequate gauge of the threat to lives and property from both wind and water.

Most alarming is the fact that the public is placing a disproportionate amount of emphasis on wind speed. This is a dangerous development because water has always been more deadly than wind during a tropical storm or hurricane.

Take the track out of the cone of error

There is also a potentially fatal flaw in the way the National Hurricane Center presents its forecast model to the public: the line that runs through the center of the NHC's "Track Forecast Cone."

According to www.nhc.noaa.gov: "The cone represents the probable track of the center of a tropical cyclone... . Based on forecasts over the previous 5 years, the entire track of the tropical cyclone can be expected to remain within the cone roughly 60-70 percent of the time."

Or to put it another way: the entire track of a tropical storm may not remain within the cone 30-40 percent of the time.

No wonder the "forecast cone" is also known as the "cone of error" and the "cone of uncertainty."

But what should be of greatest concern is that it is also referred to as the "cone of death." And far too many people understandably assume that the line that runs through the center of the cone is the path that death will take to their door.

Considering how dangerous that perception can be, the NHC should stop putting a tracking line inside the forecast cone.

People everywhere within the cone could then be encouraged to be prepared. And there would be no tracking line to needlessly panic people on the more destructive right side of the projected landfall, or unjustifiably calm people on the less intense left side.

Something that instantly conveys the risk

Hurricanes are as old as the oceans, and just as mysterious. To dispel more of that mystery, we should develop and employ the best scientific methods and minds available.

We certainly do not pretend to have mastered the science of prediction ourselves. But we do know something about the practice of preparedness.

As part of the process that alerts the public, the Saffir-Simpson scale is not a sufficiently reliable indicator of the threat of an approaching hurricane.

We need something - a number or a word or a phrase - that immediately conveys to coastal residents the potential danger of what lurks just over the horizon and the risk of not getting out of its way. And we need it as soon as possible.

This is the National Hurricane Center's Track Forecast Cone for Hurricane Katrina issued on Friday, August 26, 2005. The cone itself was accurate enough to provide adequate warning to residents along the Mississippi shoreline. But the tracking line at the center of the cone was dangerously inaccurate. It indicated that the eye was headed directly for Pascagoula, giving residents to the west - especially in Hancock County, over which the eye would pass on Monday, August 29 - a false sense of security. This is why we urge dropping the tracking line from the advisory maps.